

Mutli-Agent Transport Simulation

Summer 2023, Homework 1

The first Homework is about understanding the workflow to conduct a MATSim-Simulation. It is not too important to answer a real-world traffic planning question but to rather show that you are able to apply the steps necessary to prepare, run and analyze a MATSim-Scenario.

For this homework you are supposed to work in groups of three people. Please find a group yourself. It is only allowed to have another head count in your group if you have gotten permission from a teacher. Please approach us if you have trouble finding group members early.

The progress of the homework should be summarized in a lab protocol where you describe the steps you did, what problems you faced and how you solved them, as well as design decisions you took along the way. The protocol should be two to three pages long. Additionally you will present the results of your study to your peers in the classroom.

Written part is due: **4th of June, 23:55** as an upload on ISIS.

Presentation is: **5th of June**, during the seminar.

Task 1

The department maintains several open traffic scenarios. Pick one of the following:

- <https://github.com/matsim-scenarios/matsim-leipzig>
- <https://github.com/matsim-scenarios/matsim-berlin>
- <https://github.com/matsim-scenarios/matsim-kelheim>
- <https://github.com/matsim-scenarios/matsim-vulkaneifel>
- <https://github.com/matsim-scenarios/matsim-stuttgart>
- <https://github.com/matsim-scenarios/matsim-duesseldorf>

Set up the scenario you have chosen as we have learned in class. Also run a base case scenario on the cluster to have a reference to compare your policy against.

Task 2

Pick an interesting policy to implement in your scenario and implement it.

Note: If you add links for e.g. a motorway, it is sufficient to simply connect it with the existing network. There is no need for complicated trunks.

Note 2: If you remove links from the network, you have to delete the routes of the agents which previously used that link.

Task 3

Conduct a policy run on the cluster with the changes you have implemented as your policy.

Task 4

Analyze the results of your policy case. This should include:

- How many agents are directly affected
- Where do these agents live

- Analyze the trips of the affected agents
- Does the amount of kilometers travelled change
- Does the amount of time spent in traffic change

Additionally, you should come up with at least one (more is better) other aspect to investigate.

Task 5

The results of your study to your peers in the classroom. The presentation should include **at least**:

- Scenario
 - Which Scenario you chose
 - Some information about the Scenario
- Policy
 - What policy you implemented
 - Why you wanted to do that policy
 - How you implemented that policy
- Results
 - A comparison of your base and your policy case
 - An evaluation of your policy